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Due Date: February 2, 2004

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:

Inventor: Kenneth W. O'Flaherty

Serial #: 09/608,595

Filed: June 30, 2000

Title: INCORPORATING PREDICTIVE MODELS WITHIN INTERACTIVE BUSINESS ANALYSIS PROCESSES

Examiner: Eric T. Shaffer

Group Art Unit: 3623

Appeal No.: _____

BRIEF OF APPELLANT

MAIL STOP APPEAL BRIEF-PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In accordance with 37 C.F.R. §1.192, Appellant's attorney hereby submits the Brief of Appellant, in triplicate, on appeal from the final rejection in the above-identified application, as set forth in the Office Action dated August 29, 2003.

Please charge the amount of $330.00 to cover the required fee for filing this Brief as set forth under 37 C.F.R. §1.17(c) to Deposit Account No. 50-1673 of NCR Corporation, the assignee of the present application. Also, please charge any additional fees or credit any overpayments to Deposit Account No. 50-1673.

I. REAL PARTY IN INTEREST

The real party in interest is NCR Corporation, the assignee of the present application.

II. RELATED APPEALS AND INTERFERENCES

There is a pending appeal in related Application Serial No. 09/608,496, entitled "BUILDING PREDICTIVE MODELS WITHIN INTERACTIVE BUSINESS ANALYSIS

PROCESSES," filed on June 30, 2000, by Kenneth W. O'Flaherty, attorney's docket number 8983.

III. STATUS OF CLAIMS

Claims 1-42 are pending in the application.

Claims 1-42 were rejected under 35 U.S.C. §102(b) as being anticipated by Amado, U.S. Patent 5,701,400 (Amado).

IV. STATUS OF AMENDMENTS

No amendments have been made subsequent to the final rejection.

V. SUMMARY OF THE INVENTION

Appellant's independent claims 1, 15 and 29 are directed to a method, apparatus and article of manufacture for using predictive models within a computer-implemented business analysis environment. Claim 1 is representative, and comprises the steps of:

(a) applying a derived measure against a segment, wherein the derived measure comprises a predictive model previously-built by a model-building mechanism in a data mining system; and

(b) generating output for the segment from the predictive model in the form of measure values.

With regard to the claims, refer to the specification as follows:

(a) at page 4, line 19 through page 5, line 18;

(b) at page 5, line 20 through page 6, line 10;

(c) at page 7, line 9 through page 10, line 21 and in FIG. 2 as reference numbers 200-214;

(d) at page 11, line 1 through page 15, line 16 and in FIG. 3 as reference numbers 300-308; and

(e) at page 15, line 18 through page 19, line 8 and in FIGS. 4 and 5 as reference numbers 400-412 and 500-512.

VI. ISSUES PRESENTED FOR REVIEW

1. Whether claims 1-42 are anticipated under 35 U.S.C. §102(b) by Amado, U.S. Patent 5,701,400 (Amado).

VII. GROUPING OF CLAIMS

The claims are grouped as follows:

(a) Claims 1, 15 and 29 stand or fall together;

(b) Claims 2, 16 and 30 stand or fall together;

(c) Claims 3, 17 and 31 stand or fall together;

(d) Claims 4, 18 and 32 stand or fall together;

(e) Claims 5, 19 and 33 stand or fall together;

(f) Claims 6, 20 and 34 stand or fall together;

(g) Claims 7, 21 and 35 stand or fall together;

(h) Claims 8, 22 and 36 stand or fall together;

(i) Claims 9, 23 and 37 stand or fall together;

(j) Claims 10, 24 and 38 stand or fall together;

(k) Claims 11, 25 and 39 stand or fall together;

(l) Claims 12, 26 and 40 stand or fall together;

(m) Claims 13, 27 and 41 stand or fall together; and

(n) Claims 14, 28 and 42 stand or fall together.

Separate arguments for each of the groups of claims are provided below.

VIII. ARGUMENT

A. The Office Action Rejections

In paragraphs (3)-(4) of the Office Action, claims 1-42 were rejected under 35 U.S.C. §102(b) as being anticipated by Amado, U.S. Patent No. 5,701,400 (Amado).

Appellant's attorney respectfully traverses these rejections.

B. Appellant's Independent Claims

Appellant's independent claims 1, 15 and 29 are directed to a method, apparatus and article of manufacture for using predictive models within a computer-implemented business analysis environment. Claim 1 is representative, and comprises the steps of:

(a) applying a derived measure against a segment, wherein the derived measure comprises a predictive model previously-built by a model-building mechanism in a data mining system; and

(b) generating output for the segment from the predictive model in the form of measure values.

C. The Amado Reference

Amado describes a system for applying artificial intelligence technology to data stored in databases and generates diagnostics that are user definable interpretations of information in the database. The diagnostics are stored in a database which can be queried with downdrilling to the associated data which generated the diagnostic. A set of bidirectional links is maintained between selected data items in the first database and the corresponding diagnostics in the second database. The system acts as an information compiler in developing a map of the raw data dimension into the structured dimension of intelligent interpretation of the data in the diagnostic database.

D. The Appellant's Independent Claims Are Patentable Over The Reference

Appellant's independent claims 1, 15 and 29 are patentable over the reference because they recite a novel and nonobvious combination of steps and elements.

For example, the Office Action states that Amado teaches the element of "applying a derived measure against a segment, wherein the derived measure comprises a predictive model previously-built by a model-building mechanism in a data mining system," at column 17, lines 18-20. This description in Amado is reproduced below:

Amado: Col. 17, lines 18-20 (actually lines 16-39)

The DataLogic/R.TM. knowledge extraction tool by REDUCT Systems Inc. of Regina, SK, Canada, is a tool to reason from data, a professional tool for knowledge acquisition, classification, predictive modeling, expert systems building, and database "mining". This product is a decision support and database mining software that provides data analysis and knowledge discovery based on the methodology of rough sets. It analyzes logical patterns in data, including theories of knowledge representation, inductive logic and rough sets. It provides forecasting and decision making from imprecise, incomplete and ambiguous data. It discovers simple knowledge rules from data and provides full auditability of rules and decisions. With the Missing Data Module, the program can also process incomplete databases without filling in missing values. It generates rules at different levels of knowledge representation and rule precision. It provides several reports. The Rule Report describes significant logical patterns/rules in the database. The Rule Support Report describes pattern strength, and data which support the patterns. The Validation Report describes accuracy of the uncovered patterns and rules. The Expert Report describes recommended decisions for new cases, and the Decision Report describes how decisions were made.

In the above description, Amado merely describes predictive modeling and data mining generally, but nothing in this description refers to "applying a derived measure against a segment, wherein the derived measure comprises a predictive model previously-built by a model-building mechanism in a data mining system." Indeed, nothing in the description discusses "derived measures," "measures," or "segments." In Appellant's specification, on the other hand, a "segment" is a grouping of data elements organized about one or more attributes, a "measure" is a formula applied against a segment, and a "derived measure" is a predictive model, created by an analytic algorithm for rule induction, rather than defined by a user. None of these elements are taught in the reference.

In another example, the Office Action states that Amado teaches the element of "generating output for the segment from the predictive model in the form of measure values," at column 61, lines 34-40 and column 43, line 66 – column 44, line 1 (relative to the output format). This description in Amado is reproduced below:

Amado: Col. 61, lines 34-40 (actually lines 32-40)

Users may also define their own functions. Any function may call an external program and read the values returned from that program. In one such example, a definable function may call and run one or more neural networks on a particular set of data in the data database and return the output values of that run as weighting factors and TRUE or FALSE responses thus controlling whether specific diagnostics should or should not be written in the diagnostics database.

> Amado: Col. 43, line 66 – col. 44, line 1 (actually col. 44, line 3)
> As shown in FIG. 63, users may print or Email any information extracted from a screen, a window or a combination of windows from the previously discussed views: data, diagnostics, expert diagnostics, action categories and actions.

In the above description, Amado merely describes user-definable functions. However, nothing in this description refers to output from "predictive models" for a "segment" in the form of "measure" values. As noted above, none of these elements are taught in the reference.

Consequently, the Amado reference does not teach or suggest all the limitations of Appellant's independent claims.

Thus, Appellant submits that independent claims 1, 15, and 29 are allowable over Amado.

F. The Appellant's Dependent Claims Are Patentable Over The References

Appellant's attorney submits that dependent claims 2-14, 16-28, and 30-42 are allowable over Amado in the same manner as the independent claims, because they are dependent on independent claims 1, 15, and 29, respectively, and thus contain all the limitations of the independent claims. In addition, dependent claims 2-14, 16-28, and 30-42 recite additional novel elements not shown by Amado .

With regard to claim 2, 16 and 30, which recite "the derived measure is invoked within an application template, the application template comprises a sequence of elements linked together in a workflow, and the elements are selected from a group comprising a segment, a filter, a measure and a function," the Examiner states that Amado teaches this limitation at col. 16, line 29, FIGS. 68, 72, 88-91, 93, 94 and 96-99, col. 37, lines 12-27, col. 67, lines 15-18, col. 9, lines 27-32 and col. 61, lines 34-36. Appellant's attorney disagrees. These portions of Amado merely describe Case-based Reasoning (CBR) application templates, various data structures, operative flow diagrams, a filter dialog box, a predictive modeling system, and a definable function for calling and running neural networks, but do not teach or suggest derived measures, applications templates, or linked workflow elements comprising segments, filters, measures and functions, as recited in the context of Appellant's invention.

With regard to claim 3, 17 and 31, which recite "the application template is constructed in a visual programming environment," the Examiner states that Amado teaches this limitation at col. 16, line 29 and col. 25, line 66 – col. 26, line 1. Appellant's attorney disagrees. These portions of Amado merely describe CBR application templates and building intelligent applications by visually linking the data to develop key diagnostics, but do not teach or suggest application templates as recited in the context of Appellant's invention.

With regard to claim 4, 18 and 32, which recite "the application templates can be reused and/or modified by users," the Examiner states that Amado teaches this limitation at col. 16, line 29 and col. 25, line 66 – col. 26, line 1. Appellant's attorney disagrees. These portions of Amado merely describe CBR application templates and building intelligent applications by visually linking the data to develop key diagnostics, but do not teach or suggest application templates as recited in the context of Appellant's invention.

With regard to claim 5, 19 and 33, which recite "a segment is a grouping of data elements from a database organized about one or more attributes," the Examiner states that Amado teaches this limitation at col. 90, lines 32-34. Appellant's attorney disagrees. This portion of Amado merely describes defining a variable as a largest or smallest number, but does not teach or suggest segments or the grouping of data elements into segments, as recited in the context of Appellant's invention.

With regard to claim 6, 20 and 34, which recite "a filter defines one or more attribute constraints applied to a segment," the Examiner states that Amado teaches this limitation at col. 67, lines 15-18, col. 41, lines 63-64 and col. 43, lines 59-63. Appellant's attorney disagrees. These portions of Amado merely describe a filter dialog box, but do not teach or suggest a filter as applied to a segment, as recited in the context of Appellant's invention.

With regard to claim 7, 21 and 35, which recite "a profile is a labeled collection of attributes of a segment," the Examiner states that Amado teaches this limitation in FIG. 74 and col. 45, lines 14-18. Appellant's attorney disagrees. These portions of Amado merely describe a data structure for storing a group, formula and order of evaluation, but do not teach or suggest a profile, a segment or a labeled collection of attributes in a segment.

With regard to claim 8, 22 and 36, which recite "a measure is an expression applied to a segment," the Examiner states that Amado teaches this limitation at col. 45, lines 18-22. Appellant's attorney disagrees. This portion of Amado merely describes a data structure for

storing a group, formula and order of evaluation, but does not teach or suggest a measure or a segment, as recited in the context of Appellant's invention.

With regard to claim 9, 23 and 37, which recite "the computer-implemented business analysis environment includes an object model, and the segments, attributes, filters, and measures comprise objects," the Examiner states that Amado teaches this limitation at col. 12, lines 19-23. Appellant's attorney disagrees. This portion of Amado merely describes object-oriented database development tools generally, but does not teach or suggest an object model including segments, attributes, filters, and measures as objects.

With regard to claim 10, 24 and 38, which recite "operations upon the objects are translated into SQL statements that access corresponding tables and columns in a relational database," the Examiner states that Amado teaches this limitation at col. 66, lines 2-7, in FIG. 3 and at col. 31, lines 6-10. Appellant's attorney disagrees. These portions of Amado merely describe automatic query systems and a database structure, but do not teach or suggest the translation of object operations into SQL.

With regard to claim 11, 25 and 39, which recite "the predictive model comprises one or more SQL statements that access tables and columns in a relational database," the Examiner states that Amado teaches this limitation at col. 66, lines 2-7, in FIG. 3 and at col. 31, lines 6-10. Appellant's attorney disagrees. These portions of Amado merely describe automatic query systems and a database structure, but do not teach or suggest a predictive model that comprises SQL statements.

With regard to claim 12, 26 and 40, which recite "the predictive model comprises one or more statements executed by a database management system," the Examiner states that Amado teaches this limitation at col. 66, lines 2-7, in FIG. 3 and at col. 31, lines 6-10. Appellant's attorney disagrees. These portions of Amado merely describe automatic query systems and a database structure, but do not teach or suggest a predictive model that comprises statements executed by a database management system.

With regard to claim 13, 27 and 41, which recite "the statements access data stored in the database management system," the Examiner states that Amado teaches this limitation at col. 66, lines 2-7, in FIG. 3 and at col. 31, lines 6-10. Appellant's attorney disagrees. These portions of Amado merely describe automatic query systems and a database structure, but do not teach or

suggest statements that access data stored in a database management system, in context of a predictive model comprised of statements executed by the database management system.

With regard to claim 14, 28 and 42, which recite "the model-building mechanism comprises an analytic algorithm for rule induction performed against data stored in a database management system to create the predictive model," the Examiner states that Amado teaches this limitation at col. 17, lines 18-20, col. 15, lines 17-18 and col. 15, lines 39-44. Appellant's attorney disagrees. These portions of Amado merely describe predictive modeling and database mining generally, rough sets for data analysis and knowledge discovery, and classification rules for classifying objects, but do not teach or suggest a model-building mechanism comprising an analytic algorithm for rule induction that is used to create a predictive model.

IX. CONCLUSION

In light of the above arguments, Appellant respectfully submits that the rejections are erroneous. As a result, a decision by the Board of Patent Appeals and Interferences reversing the Examiner and directing allowance of the pending claims in the subject application is respectfully solicited.

Respectfully submitted,

Kenneth W. O'Flaherty

By his attorneys,

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G&C 30145.395-US-01

APPENDIX

1. A method for using predictive models within a computer-implemented business analysis environment, comprising:

(a) applying a derived measure against a segment, wherein the derived measure comprises a predictive model previously-built by a model-building mechanism in a data mining system; and

(b) generating output for the segment from the predictive model in the form of measure values.

2. The method of claim 1, wherein the derived measure is invoked within an application template, the application template comprises a sequence of elements linked together in a workflow, and the elements are selected from a group comprising a segment, a filter, a measure and a function.

3. The method of claim 2, wherein the application template is constructed in a visual programming environment.

4. The method of claim 2, wherein the application templates can be reused and/or modified by users.

5. The method of claim 2, wherein a segment is a grouping of data elements from a database organized about one or more attributes.

6. The method of claim 2, wherein a filter defines one or more attribute constraints applied to a segment.

7. The method of claim 2, wherein a profile is a labeled collection of attributes of a segment.

8. The method of claim 2, wherein a measure is an expression applied to a segment.

9. The method of claim 2, wherein the computer-implemented business analysis environment includes an object model, and the segments, attributes, filters, and measures comprise objects.

10. The method of claim 9, wherein operations upon the objects are translated into SQL statements that access corresponding tables and columns in a relational database.

11. The method of claim 1, wherein the predictive model comprises one or more SQL statements that access tables and columns in a relational database.

12. The method of claim 1, wherein the predictive model comprises one or more statements executed by a database management system.

13. The method of claim 12, wherein the statements access data stored in the database management system.

14. The method of claim 1, wherein the model-building mechanism comprises an analytic algorithm for rule induction performed against data stored in a database management system to create the predictive model.

15. A computer-implemented system for using predictive models within a computer-implemented business analysis environment, comprising:

(a) means for applying a derived measure against a segment, wherein the derived measure comprises a predictive model previously-built by a model-building mechanism in a data mining system; and

(b) means for generating output for the segment from the predictive model in the form of measure values.

16. The system of claim 15, wherein the derived measure is invoked within an application template, the application template comprises a sequence of elements linked together

in a workflow, and the elements are selected from a group comprising a segment, a filter, a measure and a function.

17. The system of claim 16, wherein the application template is constructed in a visual programming environment.

18. The system of claim 16, wherein the application templates can be reused and/or modified by users.

19. The system of claim 16, wherein a segment is a grouping of data elements from a database organized about one or more attributes.

20. The system of claim 16, wherein a filter defines one or more attribute constraints applied to a segment.

21. The system of claim 16, wherein a profile is a labeled collection of attributes of a segment.

22. The system of claim 16, wherein a measure is an expression applied to a segment.

23. The system of claim 16, wherein the computer-implemented business analysis environment includes an object model, and the segments, attributes, filters, and measures comprise objects.

24. The method of claim 23, wherein operations upon the objects are translated into SQL statements that access corresponding tables and columns in a relational database.

25. The system of claim 15, wherein the predictive model comprises one or more SQL statements that access tables and columns in a relational database.

26. The system of claim 15, wherein the predictive model comprises one or more statements executed by a database management system.

27. The system of claim 26, wherein the statements access data stored in the database management system.

28. The system of claim 27, wherein the model-building mechanism comprises an analytic algorithm for rule induction performed against data stored in a database management system to create the predictive model.

29. An article of manufacture embodying logic for using predictive models within a computer-implemented business analysis environment, the logic comprising:

(a) applying a derived measure against a segment, wherein the derived measure comprises a predictive model previously-built by a model-building mechanism in a data mining system; and

(b) generating output for the segment from the predictive model in the form of measure values.

30. The article of manufacture of claim 29, wherein the derived measure is invoked within an application template, the application template comprises a sequence of elements linked together in a workflow, and the elements are selected from a group comprising a segment, a filter, a measure and a function.

31. The article of manufacture of claim 30, wherein the application template is constructed in a visual programming environment.

32. The article of manufacture of claim 30, wherein the application templates can be reused and/or modified by users.

33. The article of manufacture of claim 30, wherein a segment is a grouping of data elements from a database organized about one or more attributes.

34. The article of manufacture of claim 30, wherein a filter defines one or more attribute constraints applied to a segment.

35. The article of manufacture of claim 30, wherein a profile is a labeled collection of attributes of a segment.

36. The article of manufacture of claim 30, wherein a measure is an expression applied to a segment.

37. The article of manufacture of claim 30, wherein the computer-implemented business analysis environment includes an object model, and the segments, attributes, filters, and measures comprise objects.

38. The method of claim 37, wherein operations upon the objects are translated into SQL statements that access corresponding tables and columns in a relational database.

39. The article of manufacture of claim 29, wherein the predictive model comprises one or more SQL statements that access tables and columns in a relational database.

40. The article of manufacture of claim 29, wherein the predictive model comprises one or more statements executed by a database management system.

41. The article of manufacture of claim 40, wherein the statements access data stored in the database management system.

42. The article of manufacture of claim 29, wherein the model-building mechanism comprises an analytic algorithm for rule induction performed against data stored in a database management system to create the predictive model.